

#### ABSTRACT OF DISCLOSURE

In a plasma processing apparatus for plasma-processing a silicon wafer 6 to which a protective film 6a is stuck in a state that the silicon wafer 6 is held by a first electrode 3 by electrostatic absorption and is being cooled, the top surface 3g of the first electrode 3 consists of a top surface central area A that is inside a boundary line P2 that is distant inward by a prescribed length from the outer periphery P1 of the silicon wafer 6 and in which the conductor is exposed, and a ring-shaped top surface peripheral area B that surrounds the top surface central area A and in which the conductor is covered with an insulating coating 3f. This structure makes it possible to hold the silicon wafer 6 by sufficient electrostatic holding force by bringing the silicon wafer 6 into direct contact with the conductor and to increase the cooling efficiency by virtue of heat conduction from the silicon wafer 6 to the first electrode 3.

[Selected drawing] Fig. 2